Applicant: Crow et al.
U.S.S.N.: To be assigned
Filing Date: To be assigned
EMC Docket No.: EMC-99-027DIV1

AMENDMENTS TO THE SPECIFICATION:

On page 1, before "Background of the Invention", please insert the following paragraph:

This is a divisional patent application (and claims the benefit of priority under 35 USC 120) of U.S. Patent Application No. 09/301,177 (Attorney Docket No. EMC-99-027, filed April 28, 1999.

On page 1, please delete the paragraph beginning at line 21, and replace it with the following paragraph:

FIG. 1 illustrates a file system that UNIX based systems employ to translate between abstract file names and physical storage addresses. The file system performs translations with the aid of two types of structures, which are stored on a data storage device 10. The first type of structure is a directory 12, which maps abstract directory names and file names to other directories 13 and index nodes (inodes) 15, 16, respectively. The second type of structure is the inode 15, 16, which maps abstract file segments to the physical data blocks 17, 17a, 17b storing the segments.

On page 1, please delete the paragraph beginning at line 31, and replace it with the following paragraph:

The indodes 15, 16 include lists of extents 21-27. By definition, the consecutive extents 21-24 of each inode 15 correspond to consecutive file segments and indicate the storage addresses of the segments by an address pointer and a length. The address pointer indicates the physical address of the first data block, for example, blocks 55, 59, storing the file segment. The

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length indicates the number of consecutive data blocks assigned to store the segment. For example, the extent 21, which points to the address of the data block 55 and has length three, and includes the three data blocks 55-57.

On page 6, please delete the paragraph beginning at line 14, and replace it with the following paragraph:

FIG. 5 illustrates physical structures that the file system of FIG. 3 uses to translate between abstract files and physical data blocks. The physical structures include directories 61, 62 and inodes 63, 64. Each directory 61 translates abstract file names and directory names to physical addresses of inodes 63, 64 and directory 62, respectively. Each inode 63, 64 stores a list of extents 65-66, which map consecutive file segments to strings of physical data blocks 80-82, 84-85, 92-94.

On page 6, please delete the paragraph beginning at line 29, and replace it with the following paragraph:

Each data block 80-82, 84-85, 92-94 has the same size, for example, 4K bytes. Nevertheless, the extents 65-66 can map file segments of different sizes to physical storage locations. To handle file segments of different sizes, each extent has a length field that indicates the number of data blocks in the string of data blocks that stores the associated file segment.

On page 7, please delete the paragraph beginning at line 3, and replace it with the following paragraph:

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The various extents 65, 66 of each inode 63, 64 may map to data blocks 80-82, 84-85, 92-94 of different logical volumes LV1, LV2. For example, the extents 1 and 2 of the inode 63 map to the data blocks 80-82, 84 in a first logical volume LV1, and the extent 3 of the same inode 63 maps to data blocks 92-93 in a second logical volume LV2. The different extents 65, 66 can map different segments of a single abstract file to different ones of the drivers 47-49 and to different physical disks and partitions therein.

On Page 8, please delete the paragraph beginning at line 17, and replace it with the following paragraph:

FIG. 7 illustrates the relationship between the third portion of the flag field and the data type of the data blocks pointed to by an extent. If data blocks 100 have real data for the associated filed, the third portion of the flag field indicates that the associated extent 101 is a direct extent. If the data blocks are not yet allocated, the third portion of the flag field indicates that the associated extent 102 is a hole extent. The hold extent is useful for reserving a range of offsets of a file without consuming disk space to back up the offsets. Finally, if the data blocks, for example data block 105, store more extents, the third portion of the flag field indicates that the extent, here extent 103, is an indirect extent.